

Appl. No. : 10/664,699  
Filed : September 18, 2003

## REMARKS

Applicant respectfully requests reconsideration of the present application in view of the amendments set forth above and the comments set forth below. This response is being submitted on or before November 18, 2004. Thus, fees for three-months extension of time are enclosed herewith.

### Claims 1, 3-8 and 14-15 Are Not Anticipated by Alston et al.

Claims 1, 3-8 and 14-15 were rejected as anticipated by Alston et al. (United States Patent No. 4,947,025).

Claim 1 has been amended. Claims 3 and 5 have been cancelled and substantially incorporated into Claim 1. Claims 4, 6 and 7 have been amended to depend from Claim 1. Claim 8 has been amended to make it consistent with Claim 1. Claim 14 has been amended and Claim 15 retains its original wording.

Applicant submits that, as amended, Claims 1, 3-8 and 14-15 are patentable over Alston et al. Claim 1 now includes a number of new limitations, including limitations imported from Claims 3 and 5.

### **Alston et al.**

Alston et al. disclosed a portable electric water heater for outdoor use. As introduced in the Abstract, Alston et al. disclosed that the prior art device supplied “a continuous flow of hot water.” This point was expanded upon in the Background of the Invention, where Alston et al. explained that the water supplied through the device could be used to “wash the family pet, family car, driveway, fill outdoor wading pools and the like, from an outdoor water faucet supply.” Thus, the device disclosed by Alston would supply sufficient heat to a sufficiently large body of water to allow hot water to flow for indeterminate times. In other words, the device disclosed by Alston was fairly large and contained a large volume of water at any one time.

### **Applicant’s Claimed Invention**

Applicant’s application describes and claims a water heater, and a method of using the water heater, in an aircraft application. Aircraft operate with stringent requirements relating to weight, energy usage and the like. Prior aircraft water heaters heated a volume of water that was in excess of the volume used by passengers prior to exiting a lavatory. Energy is required to heat the water and heating excess amounts of water necessarily results in wasted energy. Moreover, the size of the chamber required for heating the excess water resulted in a larger heater body.

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The larger heater body, of course, has a high dry weight, which is disfavored in aircraft applications.

In view of the drawbacks associated with the standard aircraft water heaters, Applicant recognized a need for an improved water heating system. The water heating system need only supply sufficient water for a single user at any one time and need not maintain a continuous supply of heated water. In aircraft lavatories, water mainly is used for washing hands and the supply is regulated to short bursts of water that amount to about 11 ounces per user. The time between users using the heated water is usually three or more minutes. Thus, Applicant developed a water heating system responsive to parameters specific to aircraft lavatory usage.

As recited in amended Claim 1, the water heater has a tube with a heater that is adjacent to the tube along a length that defines a volume of less than that required to contain approximately 14 ounces of water such that a user of the aircraft can obtain a supply of heated water having a volume of less than approximately 14 ounces before the water heater begins heating a new supply of heated water. This combination of features clearly defines over Alston et al.

Claim 1 also recites that the heater is positioned external of the tube such that deposits do not form on the heater. Operators of aircraft refill the water systems in various locations throughout the world. Thus, the mineral content of the water supply has the distinct potential to vary wildly depending upon where the water supply is replenished. As is known, mineral deposits often form on heater elements that are in direct contact with the water. As the deposits form, the heat transfer capability of the heater element decreases until the heater element burns out from the struggle to transfer sufficient heat to increase the water temperature to an appropriate level. Thus, positioning the heater external to the tube in the arrangement recited by Claim 1 counters the deleterious effect of minerals on the heater element. Moreover, the heat transferred to the tubing results in the entire circumference of the tubing being able to transfer heat to the water, which further improves the heat transfer capabilities and further reduces the likelihood of deposits forming within the tubing.

Alston et al. failed to disclose many of the limitations recited by Claim 1. For instance, Alston et al. failed to disclose a heating apparatus for use with a wash basin on an aircraft. Moreover, Alston et al. failed to disclose tubing in which the length of the tubing contacted by the heater defines a volume of less than that required to contain approximately 14 ounces of

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water such that a user on the aircraft can obtain a supply of heated water having a volume of less than approximately 14 ounces before the water heater begins heating a new supply of heated water. For at least these reasons, Claim 1 is not anticipated by Alston et al. Reconsideration of Claim 1 is respectfully requested.

Claims 4, 6 and 7 depend from Claim 1 and are patentable for at least the same reasons as Claim 1. Moreover, Alston et al. failed to disclose that the heater was positioned in a recess defined between the circular exterior cross-section of two adjacent coils, that the heater coils were on the outside of the tube coils or that the heater coils were on the inside of the tube coils. Thus, Claims 4, 6 and 7 also are not anticipated for these reasons as well. Reconsideration of Claims 4, 6 and 7 is respectfully requested.

Claim 14 recites, among other limitations, providing an electric heater in good heat conductive relation with a tube where the tube and the electric heater are in contact over a length that defines a volume of less than that required to contain approximately 14 ounces of water such that a user on the aircraft can obtain a supply of heater water having a volume of less than approximately 14 ounces before the water heater begins heating a new supply of heated water. For at least these reasons, Claim 14 is not anticipated by Alston et al. Reconsideration of Claim 14 is requested.

Claim 15 depends from Claim 14 and is not anticipated for at least the same reasons as Claim 14 is not anticipated. Reconsideration of Claim 15 also is requested.

Claim 2 is Patentable Over The Combination of Alston et al. and Leuschmer et al.

Claim 2 has been rejected as unpatentable over the combination of Alston et al. in view of Leuschmer et al. (United States Patent No. 3,711,681). Leuschmer et al. failed to teach or suggest a heating apparatus for use with a wash basin on an aircraft. Moreover, Leuschmer failed to teach or suggest tubing in which the length of tubing contacted by the heater defines a volume of less than that required to contain approximately 14 ounces of water such that a user on the aircraft can obtain a supply of heated water having a volume of less than approximately 14 ounces before the water heater begins heating a new supply of heated water. Because neither of the applied references taught or suggested such a limitations and because Claim 2 depends from Claim 1 and includes these limitations, the combination fails to teach every limitation of Claim 2. Reconsideration of Claim 2 is respectfully requested.

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Claims 9 and 10 are Patentable Over The Combination of Alston et al. and Jenko et al.

Claims 9 and 10 have been rejected as unpatentable over Alston et al. in view of Jenko et al. (United States Patent No. 6,628,894). Applicant disagrees. First, neither reference taught or suggested a heating apparatus for use with a wash basin on an aircraft. Moreover, Jenko et al. failed to teach or suggest tubing in which the length of tubing contacted by the heater defines a volume of less than that required to contain approximately 14 ounces of water such that a user on the aircraft can obtain a supply of heated water having a volume of less than approximately 14 ounces before the water heater begins heating a new supply of heated water. Thus, the combination cannot teach or suggest such a construction.

Moreover, Claim 9 recites that the coils are sufficiently large to extend around the exterior of a wash basin and Claim 10 recites a wash basin that is sized and configured for placement on the aircraft. Jenko et al. disclosed are arrangement for heating a continuous supply of molten material. There is no disclosure of a wash basin or any other large container. Rather, Jenko et al. teaches a construction in which material within a tube is heated before being passed from the tube. There is no teaching or suggestion of how to heat water in coils that are adjacent to the water tube and then supplying the heated water to the basin. The combination of Jenko et al. with Alston et al. would suggest that one wrap the supply tube with the heater coil, which is already shown in Figure 4 of Alston et al. Claims 9 and 10 are patentable over the applied combination because a wash basin is not taught or suggested and reconsideration is respectfully requested.

Claims 11-13 and 16 are Patentable Over The Applied Combination

Claims 11-13 and 16 have been rejected as unpatentable over Alston et al. in view of Jenko et al. and further in view of Winter et al. (United States Patent No. 6,628,894).

Again, Applicant disagrees with the basis for the rejection. First, none of the references taught or suggested a heating apparatus for use with a wash basin on an aircraft. Moreover, none of the references taught or suggested tubing in which the length of tubing contacted by the heater defines a volume of less than that required to contain approximately 14 ounces of water such that a user on the aircraft can obtain a supply of heated water having a volume of less than approximately 14 ounces before the water heater begins heating a new supply of heated water. Thus, the combination cannot teach or suggest such a construction. Moreover, none of the references taught or disclosed the particular parameters recited by Claims 12 and 13. Thus,

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Claims 12 and 13 are patentable over the applied combination and reconsideration is respectfully requested.

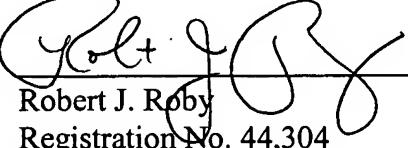
**CONCLUSION**

For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding Office Action are inapplicable to the present claims. Accordingly, issuance of a Notice of Allowance is most earnestly solicited. The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicant's attorney in order to resolve such issue promptly. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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